#ThisIsCool Webinar Series

A Hot Market for Renewable Cooling

Date: 15 April 2021 **Time:** 2:00 - 3:30pm CEST **Running time**: 60 Minutes

Co-organizers: Cool Coalition, UNEP, IRENA, SEforAll

Key Takeaways

The planet is approaching dangerous tipping points caused by unsustainable consumption and production patterns. One of such patterns is the rapidly growing energy use for cooling. According to the International Energy Agency, the worldwide installed capacity of air conditioning systems has tripled between 1990 and 2016, and the energy consumption for space cooling is expected to more than triple until 2050. At the same time, access to efficient, climate-friendly cooling for all underpins many Sustainable Development Goals.

To address the challenge of achieving universal access to cooling while avoiding substantial greenhouse gas emissions, we need to identify, implement and upscale low carbon and sustainable technologies. Renewable-based cooling options are among these solutions, but their application and transformational potential remain largely untapped.

We need to accelerate the shift to renewable-energy driven cooling solutions by raising awareness, increasing knowledge, and exchanging best practices to scale-up the use and expand the market for these technologies. Their success in the market will play a decisive role in transforming the cooling market from conventional – mainly fossil fuels based – to a clean and secure renewable energy future.

Presentation of knowledge Brief Findings of SEforAll's report "Raising Standards for Off-Grid Appliances": the report analyses the energy efficiency of different off-grid appliances and shows how raising energy efficiency standards for off-grid appliances enables energy access and facilitates the integration of renewable energy sources. You can download the brief here.

Growing cooling needs in Viet Nam and actions taken by the country to compensate this trend and reduce cooling emissions: rapid urbanization and accompanying fast-paced real estate sector are driving emissions from cooling in Vietnam, which are expected to increase under BAU scenario from 34MTCO2eq in 2017 to 80.7MTCO2eq by 2030. The demand for cooling appliances is also rising rapidly in residential sector. Several surveys show that electricity for air conditioning/cooling is responsible for 30-35% of overall energy consumption. If left unmanaged, the growth in use of cooling appliances will contribute greatly to global warming. Vietnam is putting in place strategies to mitigate the impact of cooling on energy consumption, greenhouse gas emissions and resilience. Aiming at establishing a model of sustainable growth for the country, the country has decided to include action on sustainable cooling in its enhanced Nationally Determined Contribution (NDC).

Action on cooling is a priority for urban communities in Viet Nam. Three pilot cities (Hanoi, Can Tho and Tam Ky) have been selected to adopt Urban Cooling Action Plans (UCAPs), as well as to implement pilot projects and unlock stable municipal budgets for intervention on extreme heat and urban cooling. Urban populations face increasingly severe risks from extreme heat, and it is in cities that we see strongest growth in demand for cooling, as heat is felt even more in cities

due to the urban heat island effect. The country is currently working with Cool Coalition members UNEP and GGGI on a project entitled "Sustainable Urban Cooling in Viet Nam cities" to explore how these solutions can help reduce the need for mechanical cooling in cities. The interventions will include improved urban design including renewable energy technologies, passive cooling measures, nature-based solutions, district cooling. The aim of this project is to improve urban cooling design through hands-on policy support, capacity building, piloting various business models, and engaging with the private sector. The Ministry of Natural Resources and Environment will lead this work and cooperate with line ministries and stakeholders to mainstream climate-friendly cooling in relevant national legislation and policies, and its application in relevant sectors.

Further, Vietnam has a huge renewable energy potential specifically solar energy in the central and southern regions of the country, with an average solar radiation intensity of about 5 kWh/m2. Many of its Provinces have the number of sunny hours in the year about 1400-2700 h/year, which is quite good for exploring various solar cooling technologies (both solar electric and solar thermal driven) to meet the ever-increasing cooling demand.

Cambodia's cooling requirements and action plan to promote sustainable cooling. According to the economic research institute for ASEAN and East Asia Cambodia's energy demand will double in 2040. The textile, tourism and agricultural sectors are the main energy consumers in the country, and food security a big priority. All these sectors are considered in the National Cooling Action Plan that aims at reducing greenhouse gas emissions by 2030 looking at improving efficiency and shifting to clean alternatives for cooling. Renewable energy has been prioritized in Cambodia's updated national determine contributions (NDCs) as key climate mitigation action and will also play an important role in reducing emissions from the cooling sector.

The country is taking actions on cooling at national and local level. At the national level, Cambodia is engaging key stakeholders and partners to increase their access to climate finance and ensure sustainable financing for the implementation of innovative sustainable energy and cooling solutions. Local governments are receiving support to build capacity and awareness on available clean solutions. Together with UNEP, the country is implementing a project on "urban cooling" that will look at supporting provinces that are vulnerable to climate change and that don't have access to the electricity grid, to increase access to off-grid and clean cooling solutions.

India's ambitious plan to improve efficiency, reduce emissions from the cooling sector and boost renewable energy. India has been among the first countries to approve a National Cooling Action Plan. The Indian Cooling Action Plan provides short, medium and long-term strategies to reduce cooling demand, reduce cooling energy requirements and reduce refrigerant emission from the cooling sector. Addressing the growing cooling requirements of the commercial and residential sector in a sustainable way is key to achieve the country's developmental objectives, as well us improving cold chains to reduce waste and enhance farmers benefits. Under this ambitious plan, India has committed to a 33% improvement in energy efficiency, and of achieving 40% installed capacity powered by renewables by 2030. EESL, the country's leading utility has launched a programme through which it is promoting super-efficient air and low-GWP refrigerants air conditioning. In addition to this, the Utility is working on a chiller replacement programme to replace old chillers, and is also investing in the development of district cooling projects.

Solar cooling is a clean and off-grid alternative to conventional cooling appliances. When thinking of addressing cooling demand in the future, it needs to be considered that the majority

of the growth of cooling is in the low-capacity segment, that is small multi-split or mono-split systems with very low capacity for residential and commercial sector. This market segment makes up about eighty percent of all the cooling demand. There are about two billion air conditioners installed globally and that number is going to rise to about 5.6 billion in a few decades, which presents a challenge from an energy and environmental perspective. Solar cooling technologies present a clean and off-grid alternative to traditional AC units and they are already available in the market. One of the challenges faced by the solar cooling industry is being able to drive the focus of consumers from buying the cheapest equipment with a short lifetime to a system that offers the lowest annual cost of operation.

Deep-lake district cooling in Toronto. The system takes water from Lake Ontario at 4°C and supplies cooling to over 70 skyscrapers in the Toronto. The system's electricity consumption is closed to zero and GHG emissions are 90 % less than with conventional systems. The local utility is expanding the network to connect more buildings and is always looking into innovative solutions to reduce peak power demand, improve energy efficiency and reduce GHG emissions.

Renewable cooling applications on cold chain. CLASP shares experience on their work on renewable cold chains in Africa. Cold chain technologies in Africa are still very expensive and in most cases outside of the purchasing power of target communities, which are farmers in off-grid areas. It is really important to come up with innovative business models that can increase affordability and increase accessibility for these services to these farmers. The cooling as a service model is a good example of innovative business model that allows farmer to pay only for the cooling service without having to acquire or invest in cooling equipment. CLASP is undertaking cold chain market assessments in Kenya, India and Nigeria.

About the Cool Coalition

Launched at the First Global Conference on Synergies between the 2030 Agenda and Paris Agreement, the Cool Coalition is a global multi-stakeholder network that connects a wide range of key actors from government, cities, international organizations, businesses, finance, academia, and civil society groups to facilitate knowledge exchange, advocacy and joint action towards a rapid global transition to sustainable cooling.

In September 2019, the Cool Coalition became one of the official outcomes and "Transformation Initiatives" put forward by the Executive Office of the Secretary-General for the UN Climate Action Summit in New York. The Cool Coalition has already over 100 partners driving change in the cooling sector who pledged to share knowledge, advocate and act on sustainable cooling.

About the This Is Cool Webinar Series

The Cool Coalition has teamed up with SEforALL to present a webinar series to showcase leadership and solutions from individuals, organizations, governments, private sector to accelerate the transition towards net zero cooling. The This is Cool webinar series draws on the. Sustainable Energy for All (SEforALL) "This Is Cool" campaign which shows what can be done across the world to make net-zero cooling for all a reality.